LISTING OF CLAIMS

Claim 1 (original): A method of automatically creating computer simulations or analyses of signal transfers of a circuit or system design, comprising:

   providing a description of a physical design of a circuit or system having physical components and in which at least one of the physical components may transfer a signal to at least one physical component, wherein the physical design description includes an identification of the physical components and information descriptive of physical inter-connectivity among the physical components;

   providing a signal transfer description for at least one signal transfer, the signal transfer description including a set of source nodes and a set of receiver nodes, wherein the set of source nodes provide the signal to be transferred and the receiver nodes receive the signal transferred from the corresponding set of source nodes, and wherein each node is described by information associated with physical components;

   identifying a signal transfer description as corresponding to at least a portion of the physical inter-connectivity information;

   using information in the corresponding signal transfer description to construct computer simulations or analyses of the corresponding physical inter-connectivity.

Claim 2 (original): The method of claim 1 wherein the node information associated with physical components includes a logical pin definition identifying logical pin names of the physical component.

Claim 3 (original): The method of claim 1 wherein the node information associated with physical components includes a part identification suggestive of the functionality of the physical component.

Claim 4 (original): The method of claim 3 wherein the node information is associated with a physical component via part mapping information and via a CAD parts list, wherein the part mapping information associates the part identification with a corporate part number, and wherein the CAD parts list associates a corporate part number with an identification of the physical component.

Claim 5 (original): The method of claim 3 wherein the node information is associated with a physical component via part mapping information wherein the part mapping information associates the part identification with model information, and wherein the act of using information in the corresponding signal transfer description to construct computer simulations or analyses uses the node information to find corresponding model information to use in the computer simulations or analyses.

Claim 6 (original): The method of claim 1 wherein the computer simulations or analyses include timing verification analyses of signal transfers to physical components corresponding to receiver nodes.

Claim 7 (original): The method of claim 1 wherein the computer simulations or analyses include waveform analyses of signal transfers for all nodes in the signal transfer description.

Claim 8 (original): The method of claim 1 wherein the computer simulations or analyses avoid analysis of false paths, wherein a false path is a path within the set of all possible signal paths defined by the physical inter-connectivity but which is not used in a signal transfer.

Claim 9 (original): The method of claim 1 wherein the act of identifying a signal transfer description as corresponding to at least a portion of the physical inter-connectivity information includes the acts of

determining a set of component pin identifications associated with the physical inter-connectivity information;

determining a corporate part number for the components associated with the component pin identifications;

determining if the signal transfer description includes a part ID associated with the corporate part number; and

determining if the transfer description includes pin definition information containing the component pin identifications associated with the physical inter-connectivity information.

Claim 10 (original): The method of claim 1 further including identifying physical inter-connectivity information of interest and using the identified inter-connectivity information when identifying a corresponding signal transfer description.

Claim 11 (original): The method of claim 1 further including identifying a signal transfer description of interest and using the identified signal transfer description when identifying a corresponding physical inter-connectivity information.

Claim 12 (original): The method of claim 1 wherein the signal transfer description includes other information representative of the data rate, whether a signal is a clock signal or a

data signal, and whether a signal is single ended or differential, and wherein the other information is also used to construct computer simulations or analyses.

Claim 13 (original): A system for automatically creating computer simulations or analyses of signal transfers of a circuit or system design, comprising:

a computer-readable description of a physical design of a circuit or system having physical components and in which at least one of the physical components may transfer a signal to at least one other physical component, wherein the physical design description includes an identification of the physical components and computer-readable information descriptive of physical inter-connectivity among the physical components;

a computer-readable signal transfer description for at least one signal transfer, the signal transfer description including a set of source nodes and a set of receiver nodes, wherein the set of source nodes provide the signal to be transferred and the receiver nodes receive the signal transferred from the corresponding set of source nodes, and wherein each node is described by information associated with physical components;

logic to identify a signal transfer description as corresponding to at least a portion of the physical inter-connectivity information;

logic, responsive to information in the corresponding signal transfer description, to construct computer simulations or analyses of the corresponding physical inter-connectivity.

Claim 14 (original): The system of claim 13 wherein the node information associated with physical components includes a logical pin definition identifying logical pin names of the physical component.

Claim 15 (original): The system of claim 13 wherein the node information associated with physical components includes a part identification suggestive of the functionality of the physical component.

Claim 16 (original): The system of claim 15 wherein the node information is associated with a physical component via computer-readable part mapping information and via a computer-readable CAD parts list, wherein the part mapping information associates the part identification with a corporate part number, and wherein the CAD parts list associates a corporate part number with an identification of the physical component.

Claim 17 (original): The system of claim 15 wherein the node information is associated with a physical component via computer-readable part mapping information, wherein the part mapping information associates the part identification with a computer-readable model information, and logic to construct computer simulations or analyses includes logic to analyze the node information to find corresponding model information to use in the computer simulations or analyses.

Claim 18 (original): The system of claim 13 wherein the computer simulations or analyses include timing verification analyses of signal transfers to physical components corresponding to receiver nodes.

Claim 19 (original): The system of claim 13 wherein the computer simulations or analyses include waveform analyses of signal transfers for all nodes in the signal transfer description.

Claim 20 (original): The system of claim 13 wherein the computer simulations or analyses avoid analysis of false paths, wherein a false path is a path within the set of all possible signal paths defined by the physical inter-connectivity but which is not used in a signal transfer.

Claim 21 (original): The system of claim 13 wherein the logic to identify a signal transfer description as corresponding to at least a portion of the physical inter-connectivity information includes

logic to determine a set of component pin identifications associated with the physical inter-connectivity information;

logic to determine a corporate part number for the components associated with the component pin identifications;

logic to determine if the signal transfer description includes a part ID associated with the corporate part number; and

logic to determine if the transfer description includes pin definition information containing the component pin identifications associated with the physical inter-connectivity information.

Claim 22 (original): The system of claim 13 further including logic to identify physical inter-connectivity information of interest and logic, responsive to the identified inter-connectivity information, to identify a corresponding signal transfer description.

Claim 23 (original): The system of claim 13 further including logic to identify a signal transfer description of interest and logic, responsive to the identified signal transfer description, to identify corresponding physical inter-connectivity information.

Claim 24 (original): The system of claim 13 wherein the computer-readable signal transfer description includes other information representative of the data rate, whether a signal is a clock signal or a data signal, and whether a signal is single ended or differential, and wherein the logic to construct is responsive to the other information.

Claim 25 (original): A computer program product for automatically creating computer simulations or analyses of signal transfers of a circuit or system design, wherein the computer program product includes computer-executable instructions on a computer-readable medium, the instructions being operable in a design system having a description of a physical design of a circuit or system having physical components and in which at least one of the physical components may transfer a signal to at least one other physical component, wherein the physical design description includes an identification of the physical components and information descriptive of physical inter-connectivity among the physical components, wherein the computer-executable instructions includes

a first set of instructions having a signal transfer description for at least one signal transfer, the signal transfer description including a set of source nodes and a set of receiver nodes, wherein the set of source nodes provide the signal to be transferred and the receiver nodes receive the signal transferred from the corresponding set of source nodes, and wherein each node is described by information associated with physical components;

a second set of instructions for identifying a signal transfer description as corresponding to at least a portion of the physical inter-connectivity information;

a third set of instructions for using information in the corresponding signal transfer description to construct computer simulations or analyses of the corresponding physical inter-connectivity.

Claim 26 (original): A computer program product having computer-readable information to describe a signal transfer description for at least one signal transfer, in which the signal transfer description includes a set of source nodes and a set of receiver nodes, and the set of source nodes provide the signal to be transferred and the receiver nodes receive the signal transferred from the corresponding set of source nodes, and wherein each node is described by information associated with a physical component of a circuit or system design as described in a physical CAD description.

Claim 27 (original): A method of validating design libraries having information descriptive of physical components including information identifying input and output pins of a component, comprising:

> providing a signal transfer description for at least one signal transfer for a circuit or system design, the signal transfer description including a set of source nodes and a set of receiver nodes, wherein the set of source nodes provide the signal to be transferred and the receiver nodes receive the signal transferred from the corresponding set of source nodes, and wherein each node is described by information associated with physical components;

> identifying a physical component corresponding to a source node in the signal transfer description;

> identifying a set of pins for the identified physical component that correspond to the source node;

> verifying that all pins identified as corresponding to the source node are capable of being an output device;

> identifying a physical component corresponding to a receiver node in the signal transfer description;

> identifying a set of pins for the identified physical component that correspond to the receiver node; and

verifying that all pins identified as corresponding to the receiver node are capable of being an input device.